

Appl. No. 10/766,231

Amdt. Dated April 26, 2006

Reply to Office Action of February 9, 2006

AMENDMENTS TO THE DRAWINGS

The attached sheet of drawings includes changes to FIGS. 6 and 7. This sheet, which includes FIGS. 6 and 7, replaces the original sheet including FIGS. 6 and 7. In FIG. 6, previously omitted reference sign "d₁" has been added, and in FIG. 7, previously omitted reference sign "d₂" and a previously omitted arrowhead have been added.

Attachment: Replacement Sheet

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REMARKS

This is a full and timely response to the non-final Office action mailed February 9, 2006. Reexamination and reconsideration in view of the foregoing amendments and following remarks is respectfully solicited.

Claims 1, 2, 5-13, 15-17, and 20-25 are pending in this application, with Claims 1, 11, and 16 being the independent claims. Claims 1, 5, 7, 11, 15, 16, 20, and 22 have been amended, and Claims 3, 4, 14, 18, and 19 have been canceled herein. No new matter is believed to have been added.

Objections to the Drawings

The drawings were objected to under 37 CFR § 1.84(p)(5) as allegedly failing to include certain reference numerals. In particular, FIGS. 6 and 7 did not include d_1 or d_2 , although these signs are referenced in the description. These reference signs have been added to FIGS. 6 and 7, as appropriate. As such, reconsideration and withdrawal of the drawing objection is requested.

Objections to the Specification

The specification was objected to for various minor informalities allegedly contained in paragraphs [0007], [0010], [0030], and [0031]. Each of these objections, with the exception of one, has been obviated by making the corrections recommended in the Office action. The single objection that has not been obviated relates to the Office action's erroneous objection to the phrase "... cooling flow passing through, and thus the cross-sectional area of, the film cooling holes ..." (emphasis added) in paragraph [0007]. The Office action suggests that this bolded phrase should instead be "area, of." This suggestion is, of course, grammatically incorrect, and is not what Applicants intended. Thus, this change has not, and will not, be made.

The specification was also objected to as allegedly failing to provide proper antecedent basis for some of the claimed subject matter, and cites 37 CFR § 1.75(d)(1) and MPEP § 608.01(o) in support of the objections. In response to these latter objections, Applicants have selectively amended either the specification or the claims to provide

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sufficient antecedent basis between the specification and Claims 3, 7, 10, and 12.

However, Applicants have not, will not and, as will now be explained, should not be required to amend Claim 16. Before doing so, it is noted that, in the instances where the specification has been amended, since the claims form part of the original disclosure, amendment of the specification to be consistent with the claims does not constitute the addition of new matter.

Applicants submit that 37 C.F.R. § 1.75(d)(1) and M.P.E.P. § 608.01(o) are being misread and misapplied to the instant application. In particular, 37 C.F.R. § 1.75(d)(1) states that “the terms and phrases used in the claims must find clear support *or* antecedent basis in the description *so that the meaning of the terms in the claims may be ascertainable* by reference to the description.” See 37 C.F.R. § 1.75(d)(1) (emphasis added). Moreover, M.P.E.P. 608.01(o) states that “[t]he meaning of every term used in any of the claims should be apparent from the descriptive portion of the specification with clear disclosure as to its import; and in mechanical cases, it should be identified in the descriptive portion of the specification by reference to the drawing, *designating the part or parts therein to which the term applies.*” See M.P.E.P. 608.01(o) (emphasis added). These rules and guidelines do not require that each and every term that denotes structure be used in a verbatim sense, nor that each term has to have a specific reference numeral in the drawings. Rather, Applicants submit that the intent of Rule 75 and M.P.E.P. § 608.01(o) is that the description be written so that terms used in the claims are *readily ascertainable* and that, especially in mechanical-type cases, the *part to which claim terms apply* are identified.

Applicants submit that each and every allegedly objectionable term in independent Claim 16 is readily ascertainable in at least paragraphs [0021] through [0024] and in FIG. 1.

In view of the foregoing, Applicants respectfully solicit reconsideration and withdrawal of the objections to the specification.

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Objections to the Claims

Claims 11-15 were objected to due to the presence of various alleged informalities. In response, Applicants have amended the objected to claims (Claims 11 and 15) to obviate the specific objections. Hence reconsideration and withdrawal of the same are respectfully requested.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 14, 15, and 22 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Claim 14 has been canceled, and its recited features have been incorporated into independent Claim 11, taking into account the alleged indefiniteness, thereby obviating the rejection of Claims 14 and 15. As to Claim 22, it has been amended to overcome the alleged indefiniteness.

In view of the foregoing, Applicants solicit reconsideration and withdrawal of the § 112, second paragraph rejections.

Rejections Under 35 U.S.C. § 102

Claims 1-7, 11-13, and 16-22 were rejected under 35 U.S.C. § 102 as allegedly being anticipated by U.S. Patent No. 6,206,638 (Glynn et al.), and Claims 1-8, 11-13, and 16-23 were rejected under 35 U.S.C. § 102 as allegedly being anticipated by European Patent Application No. 742,347 (Alison Engine). These rejections are respectfully traversed.

Independent Claims 1 and 16 now each recite, *inter alia*:

- (i) the centerline of each film cooling hole forms a compound angle with respect to a tangent of the airfoil outer surface,
- (ii) a distance between the centerlines of each film cooling hole is at least a predetermined minimum distance,
- (iii) the compound angle of each film cooling hole centerline comprises at least a first angle formed with respect to a first predetermined datum structure and a second angle formed with respect to a second predetermined datum structure, and
- (iv) the outlet port of each film cooling hole is located a first predetermined distance from the first datum structure and a second predetermined distance from the second datum structure.

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Glynn et al. disclose a turbine blade having cooling holes (48) disposed at compound angles; however, this citation fails to disclose, or even remotely suggest, any particulars regarding the compound angle (e.g., that it comprises at least a first angle formed with respect to a first predetermined datum structure and a second angle formed with respect to a second predetermined datum structure) or any particulars regarding the location of each film cooling hole outlet port (e.g., that it is located a first predetermined distance from the first datum structure and a second predetermined distance from the second datum structure).

Alison Engine relates to a turbine blade and discloses that the film cooling holes (26) are positioned at an acute angle (θ) to the outer surface (36) of the airfoil (16). However, it does not disclose or suggest anything about the angle being a compound angle, let alone the particulars regarding the location of each film cooling hole outlet port.

In view of the foregoing, Applicants request reconsideration and withdrawal of the § 102 rejections of at least independent Claims 1 and 16. As regards the rejection of independent Claim 11, this claim has been amended to recite the features of as-filed dependent Claim 14, thereby rendering its rejection moot.

Conclusion

Based on the above, independent Claims 1, 11, and 16 are patentable over the citations of record. The dependent claims are also deemed patentable for the reasons given above with respect to the independent claims and because each recite features which are patentable in its own right. Individual consideration of the dependent claims is respectfully solicited.

The other art of record is also not understood to disclose or suggest the inventive concept of the present invention as defined by the claims.

Hence, Applicant submits that the present application is in condition for allowance. Favorable reconsideration and withdrawal of the objections and rejections set forth in the above-noted Office action, and an early Notice of Allowance are requested.

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If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the below-listed number.

If for some reason Applicant has not paid a sufficient fee for this response, please consider this as authorization to charge Ingrassia, Fisher & Lorenz, Deposit Account No. 50-2091 for any fee which may be due.

Respectfully submitted,
INGRASSIA FISHER & LORENZ

Dated: April 26, 2006

By: 

Paul D. Amrozowicz
Reg. No. 45,264
(480) 385-5060